



## Imagine IoT Prototype Challenge

### Story

#### Summary

Kamala Jayakumar is a daily wage labourer from rural part of southern India. She earns about Rs.400 per day (~ \$6/day) and uses that to support a family of 4. She depends on the Public distribution system (PDS) established by the Indian government to procure subsidized food and non-food items to provide for her family. She needs access to high quality, reasonably priced, convenient, anytime available food depot.

#### Overview

Public distribution system (PDS) is an Indian food security system. Established by the Government of India under Ministry of Consumer Affairs, Food, and Public Distribution are managed jointly by state governments in India, it distributes subsidized food and non-food items to India's poor. This scheme was launched in India on June 1997. Major commodities distributed include staple food grains, such as wheat, rice, sugar, and kerosene, through a network of fair price shops (also known as ration shops) established in several states across the country. Food Corporation of India, a Government-owned corporation, procures and maintains the PDS.

In coverage and public expenditure, it is considered to be the most important food security network. However, the food grains supplied by the ration shops are not enough to meet the consumption needs of the poor or are of inferior quality. The average level of consumption of PDS grains in India is only 1 kg per person / month. The PDS has been criticised for its urban bias and its failure to serve the poorer sections of the population effectively. The targeted PDS is costly and gives rise to much corruption in the process of extricating the poor from those who are less needy. Today, India has the largest stock of grain in the world besides China, the government spends Rs. 750 billion (\$13.6 billion) per year, almost 1 percent of GDP, yet 21% remain undernourished. Distribution of food grains to poor people throughout the country is managed by state governments. As of date there are about 500,000 Fair Price Shops (FPS) across India.

The Unique Identification Authority of India (UIDAI) is a central government agency of India. Its objective is to collect the biometric and demographic data of residents (such as photograph, ten fingerprints and two iris scans), store them in a centralised database, and issue a 12-digit

unique identity number called Aadhaar to each resident. It is considered the world's largest national identification number project.

[Note: Above information was sourced from wikipedia]

### Envisioned IoT Solution:

- A smart, connected and automated vending machine capable of dispensing the food items such as wheat, rice, sugar, etc. from the PDS inventory
- Each of these vending machine will be placed in the already existing PDS/Ration shop locations and would be serviced by already existing cohort of staffs and supply chain - enabling the massive efficiency, transparency and accountability so needed in the system
- The smart PDS vending machine would accessible 24/7. It can be seamlessly, intuitively be operated by anyone and can be accessed either by:
  - using a mobile app (especially pertinent given that India has very good mobile services penetration) which is authorized and verified with full Aadhaar number of the user and constituent family members
  - touch screen on the smart vending machine itself with intuitive, local language adaptable, simple UI. User is authorised using quick biometric scans (thumbprint impressions) linked to their Aadhaar number and gain access to the services

### Persona



**Name:** Kamala Jayakumar

**Role:** Daily Wage Manual Labourer working in Agricultural sector

**Persona Statement:** "I would like to find stable employment I can access and work hard in it, so that I get enough income to provide for my family and ensure a better living for them"

**About:**

- 38 years old, widowed, supports her two preteen kids and mother
- Based in rural part of southern India which is mainly an agrarian society. She was born and raised here.
- Works in a variety of manual jobs associated with agriculture sector (which is still very manual and labour intensive in India) such as weeding, harvesting, threshing, etc. mostly available year-round. She earns about Rs.400 per day (~ \$6/day)
- She depends on the Public distribution system (PDS) established by the Indian government to procure subsidized food and non-food items to provide for her family

**Main Goals:**

- Be able to smartly use her daily income to provide good, nourishing meal for her family
- Ensure access to better educational opportunities for her kids and try to provide better living for them

**Needs:**

- Access to good quality and reasonably priced food supply repository
- Convenient, flexible timing to access the said food supply as she cannot afford to take time out her work
- Ubiquitous, hassle-free access to information on the food subsidies, ration quota and numerous social benefits schemes available to her and her family

**Pain Points:**

[Note: For all the good they do and potential promise of much more positive impact, PDS/Ration shops have been mired in massive inefficiency, lack transparency and accountability]

- Growing number of instances of receiving inferior quality food grains
- Some inventory supplies (even for the essential food grains) exhaust quickly, even though they are apparently well stocked and provisioned
- There is seldom rate chart and quantity available displayed in the blackboards in front of shops. So, anxiety of what supply will be available for procurement and at what price
- They are no fixed time and date for the distribution of stocks. They are done on an ad-hoc basis, as and when supplies supposedly arrives
- Loss of income on the days when she has to visit PDS/Ration shops to procure supplies because of massive amount time wasted standing in long lines and therefore, have to take time out of work

## Point of View (PoV)

As a Mother

I need a way to access and avail quality food products at subsidized price from PDS/Ration shop at my convenience without worrying about being hassled or short changed

So that I be able to feed my family healthy, nutritious, quality food.

# User Experience Journey

|             |                                                                                                                                                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                       |                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Actions     | + Walking to the neighbourhood PDS/Ration Shop to check when they would be open and also, when specific food and non-food items would be distributed<br>+ Look at the notice/flyer stuck on the closed window of the shop | + Takes time out of work and walks down again to PDS/Ration Shop<br>+ Gets in line to buy                         | + Check in with PDS/Ration shop staff to see what supplies are currently available, at what cost and how much quantity can be availed under her PDS quota<br>+ Order the supplies, overlook the measuring / weighing and pay for them | + Walk and carry all the supplies back to home                                                                                                                      |
| Mindset     | + When can I find time between work to come to the PDS/Ration shop and get the essentials?<br>+ Would the limited food supply back home last that long?                                                                   | + How long do I have to wait?<br>+ The line seems pretty long, would the supplies in the store last till my turn? | + Finally! Hope they have all the essential supplies left.<br>+ How much money is it going to cost me? Do I have enough with me?                                                                                                      | + Thank god! I got enough to last us all for the next week<br>+ Have to check the store again soon to see when Pulses & Kerosene supply arrives and are distributed |
| Feeling     | <div><div></div><div></div><div></div><div></div></div> <div></div>                                                                                                                                                       | <div><div></div><div></div><div></div><div></div></div>                                                           | <div><div></div><div></div><div></div><div></div></div>                                                                                                                                                                               | <div><div></div><div></div><div></div><div></div></div>                                                                                                             |
| Touchpoints | + Notice/flyer pasted on the PDS shop's window                                                                                                                                                                            | + A peek every so often at the storefront                                                                         | + PDS/Ration Shop staff<br>+ Chalkboard in the storefront listing current supplies                                                                                                                                                    | + Supplies brought from the PDS/Ration Shop                                                                                                                         |

# Prototype

BUILD Prototype Link: <https://goo.gl/Vt6K8a>

## 1. Home Page



PDS Portal of India



### Your Family: Linked Accounts

|                                                                                     |                                                                                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|    | <p>Name : Kamala Jayakumar<br/>Aadhaar Number : 7850 1077 1788<br/>Relationship : Head of Family</p> |
|   | <p>Name : Ravi Jayakumar<br/>Aadhaar Number : 8875 7332 9945<br/>Relationship : Son</p>              |
|  | <p>Name : Shyama Jayakumar<br/>Aadhaar Number : 2577 7306 7353<br/>Relationship : Daughter</p>       |
|  | <p>Name : Radha Raguvaran<br/>Aadhaar Number : 1233 5161 9303<br/>Relationship : Mother</p>          |

 Buy from PDS Vending Terminal

## 2. Supply List Page



PDS Portal of India



Available Items (3)

↑↓

▼

Product : **Rice**

Quota : 20 Kg

Price : 0 Rupees



Product : **Wheat**

Quota : 10 Kg

Price : 7.50 Rupees



Product : **Sugar**

Quota : 2 Kg

Price : 13.50 Rupees



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## 3. Dispense Page



PDS Portal of India



Dispensing...



 Rice

20  
Kg

Total Cost: 0.00 Rupees

✕

Cancel